PROFILE SHEET
Chemistry

Publisher: Holt, Rinehart & Winston
Text/Instructional Material Title: Modern Chemistry, Enhanced Online Edition, 2004

Science Standard	Rating		
	Adequate	Limited	No Evidence
CH.1	✓		
CH.2	✓		
CH.3	✓		
CH.4	✓		
CH.5	✓		
Additional Criteria			
CH-AC.1	✓		
CH-AC.2	✓		
CH-AC.3	✓		
CH-AC.4	✓		
CH-AC.5	✓		

The Virginia Department of Education recommends to the Board of Education:

YES ✓ NO

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Science Standard	**Rating Scale** Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	**Limited**	**No Evidence**
CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed, and evaluated, produce observations and verifiable data. Key concepts include			
a) designated laboratory techniques;	✓		
b) safe use of chemicals and equipment;	✓		
c) proper response to emergency situations;	✓		
d) manipulation of multiple variables with repeated trials;	✓		
e) accurate recording, organizing, and analysis of data through repeated trials;	✓		
f) mathematical and procedural error analysis;	✓		
g) mathematical manipulations (SI units, scientific notation, linear equations, graphing, ratio and proportion, significant digits, dimensional analysis);	✓		
h) the use of appropriate technology, including computers, graphing calculators, and probeware, for gathering data and communicating results; and	✓		
i) construction and defense of a scientific viewpoint (the nature of science).	✓		
Overall Rating for Standard	✓		

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Science Standard	**Rating Scale** Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	**Limited**	**No Evidence**
CH.2 The student will investigate and understand that the placement of elements on the periodic table is a function of their atomic structure. The periodic table is a tool used for the investigations of			
a) average atomic mass, mass number, and atomic number;	✓		
b) isotopes, half lives, and radioactive decay;	✓		
c) mass and charge characteristics of subatomic particles;	✓		
d) families or groups;	✓		
e) series and periods;	✓		
f) trends including atomic radii, electronegativity, shielding effect, and ionization energy;	✓		
g) electron configurations, valence electrons, and oxidation numbers;	✓		
h) chemical and physical properties; and		✓	
i) historical and quantum models.	✓		
Overall Rating for Standard	✓		

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	Adequate	**Limited**	**No Evidence**
CH.3 The student will investigate and understand how conservation of energy and matter is expressed in chemical formulas and balanced equations. Key concepts include			
a) nomenclature;	✓		
b) balancing chemical equations;	✓		
c) writing chemical formulas (molecular, structural, empirical, and Lewis diagrams);	✓		
d) bonding types (ionic, covalent);	✓		
e) reaction types (synthesis, decomposition, single and double replacement, oxidation-reduction, neutralization, exothermic and endothermic); and	✓		
f) reaction rates and kinetics (activation energy, catalysis, degree of randomness).	✓		
Overall Rating for Standard	✓		

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Science Standard	**Rating Scale** Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	**Limited**	**No Evidence**
CH.4 The student will investigate and understand that quantities in a chemical reaction are based on molar relationships. Key concepts include			
a) Avogadro's principle and molar volume;	✓		
b) stoichiometric relationships;	✓		
c) partial pressure;	✓		
d) gas laws;	✓		
e) solution concentrations;	✓		
f) chemical equilibrium; and	✓		
g) acid/base theory: strong electrolytes, weak electrolytes, and nonelectrolytes; dissociation and ionization; pH and pOH; and the titration process.	✓		
Overall Rating for Standard	✓		

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Science Standard	**Rating Scale** Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	**Limited**	**No Evidence**
CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. Key concepts include			
a) pressure, temperature, and volume;	✓		
b) vapor pressure;	✓		
c) phase changes;	✓		
d) molar heats of fusion and vaporization;		✓	
e) specific heat capacity; and	✓		
f) colligative properties.	✓		
Overall Rating for Standard	✓		

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Additional Criteria	**Rating Scale** Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	**Limited**	**No Evidence**
1. Safe use of materials and equipment is encouraged.	✓		
Overall Rating for Additional Criteria 1	✓		
2. Materials emphasize the use of effective instructional practices and learning theories. • Students are guided through different approaches such as the learning cycle. • Students are provided the opportunity to conduct scientific inquiry appropriate for their age, grade, and maturity. • Concepts are introduced through concrete experiences. • Students are required to use manipulative materials during investigations and activities. • Multiple opportunities are provided for students to apply concepts. • Learning activities offer opportunities for students to revise their prior knowledge and create new knowledge. • Students are encouraged to pose questions and to identify problems, as well as propose multiple solutions and design and conduct tests of inference. • Students collect and interpret data through a variety of technologies and draw conclusions based on that data.	✓		
Overall Rating for Additional Criteria 2	✓		

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Additional Criteria	**Rating Scale** Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	**Limited**	**No Evidence**
3. Materials present content in an accurate, unbiased manner, and are based on sound science. • Materials do not contain content errors (omissions of current content, out-of-date content, overgeneralizations, etc.). • Materials do not contain production errors (misspelled words, word omissions, incorrect answers). • Diverse groups (racial, ethnic, cultural, linguistic), males and females, people with disabilities, and people of all ages are represented appropriately. • The materials are free of non-scientific explanation.	✓		
Overall Rating for Additional Criteria 3	✓		

*Please note that the Department of Education does not certify that all inaccuracies and/or grammatical errors have been detected in this instructional item and reported in this correlation profile.

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Additional Criteria	**Rating Scale** Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	**Limited**	**No Evidence**
4. Materials promote student assessment as an integral part of the instructional process. • Assessment suggestions and scoring criteria for student performances on work such as lab practicals or tasks, concept maps, research projects, observation checklists, etc., are provided. • Assessment items include multiple-choice, short answer, essay and open-ended questions with charts, graphs, and diagrams imbedded within the items. • Options include techniques for assessing students' prior knowledge. • Assessment items reflect the rigor and the intent of the standards. For example, they require students to use higher order thinking skills to apply, analyze, synthesize, evaluate, and make judgments or recommendations.	✓		
Overall Rating for Additional Criteria 4	✓		

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Additional Criteria	**Rating Scale** Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	**Limited**	**No Evidence**
5. Materials are presented in an organized, logical manner and are appropriate for the age, grade, and maturity of the students. • Materials are organized appropriately within and among units of study. • Format design includes titles, subheadings, and appropriate cross-referencing for ease of use. • Writing style, length of sentences, and vocabulary are appropriate. • Graphics and illustrations are appropriate. • Level of abstraction is appropriate, and real life examples, including careers are provided. • Sufficient applications are provided to promote depth of understanding.	✓		
Overall Rating for Additional Criteria 5	✓		